

Penicillin: "The Miracle Drug"

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In agricultural production and technology, the United States has always been a worldwide leader. Agriculture is a major industry in Illinois, and as a result, agricultural research has been extremely beneficial to this state. Important contributors to agriculture research include the United States Department of Agriculture (USDA), and its research laboratories like the one in Peoria, Illinois, and the National Center for Agricultural Utilization Research (NCAUR). The famous production of penicillin is an example of how the NCAUR impacted Peoria. One important discovery, the production of penicillin, began in England and ended here. Because of the development of penicillin, one of the most well known scientific discoveries, the National Center for Agriculture Utilization Research lab influenced Peoria.

Peoria was chosen for the Northern Lab because the location was in the middle of agricultural production. The main motivation was to seek alternative usage of surplus crops. In the 1930s farmers had crop surpluses because demand was low. Mechanization had increased agricultural production. Congress then authorized means to end the farm depression. Meanwhile, scientists conducted research on corn, wheat, and agricultural waste. Even though the agricultural lab had a slow beginning, the tasks ahead influenced Peoria forever.

At St. Mary's Hospital in England, a penicillin spore apparently blew in the window; the bacteria landed in a bacteria culture and never developed. This unexpectedly became the introduction of penicillin. Scientist Alexander Fleming

discovered a mold and in 1928 later identified *penicillium notatum* to have great bacteria-killing capabilities. Research on the drug continued in England until 1940. Constant wartime bombings by the Nazis forced cessation of experimental work. Because of this, two British scientists were dispatched to the United States to find a place where experimentation could be continued. Wartime pressures and fear that the Germans might rob the English of penicillin brought scientist Howard Florey to Illinois, with freeze-dried strains of Flemming's mold. They selected the Peoria laboratory and the research goal was to make penicillin commercially practical. After this, a number of Peoria staff immediately started to work on methods of producing a greater yield of penicillin from the mold. In order to achieve this, further research investigated dairy products. Scientists finally developed the method for producing the drug in large quantities. Fifteen pharmaceutical manufacturers later produced the drug using the process developed in Peoria. As a result of scientists choosing Peoria, Illinois, the study of the precious mold, penicillin began.

A significant part of research was collection of any and all food molds found at supermarkets in Peoria. One contributor to the research, Mary Hunt, also known as "Moldy Mary," had a concentration of penicillin spores found on cantaloupe. There was controversy over where the moldy cantaloupe actually came from. Furthermore, lactose, otherwise identified as milk, sugar, and essential salts, are included in the diet of penicillin. Extracted, the penicillin was frozen and then evaporated with high vacuum machines; the outcome was a yellow powder, which was the finished product. Dr. Coghill later defined penicillin as a "bright yellow chemical produced by mold grown on

a sugar solution.” The Peoria laboratory isolated superior strains of the mold and British scientists made the decision to continue research on penicillin in Peoria.

The Peoria laboratory had one of the largest collections of mold and microorganisms, of which 2,000 were molds. Fleming’s discovery of penicillin has been recognized as both accident and miracle because the mold “appeared from the air”. British and American laboratory technicians, along with twenty scientists, succeeded in increasing penicillin yield more than 100 times. In three years, development and growth of the drug-producing mold was accomplished. Continued research increased its production 100 fold. Experimentation at the laboratory not only increased the production of the mold, but scientists there have improved the strains. Penicillin was later named the cheapest antibiotic ever. People no longer died from common infections like bacterial pneumonia. Infections like pneumonia and gangrene were no longer deadly due to commercial development and production.

“The penicillin research done is probably the most significant medical and humanitarian project ever carried on at the lab in terms of benefits,” according to Dr. William Tallent, director of the laboratory. He also stated that the small number of scientists involved in the research was very significant because the drug had a positive outcome. With penicillin, patients slowly dying were now cured within two to four weeks. Bone infections responded almost magically to the treatment in various hospitals located a short distance from the lab. Refined, the drug became a white powder, which was made available to the armed forces. After commercial drug production, it became available to 2,100 hospitals. Some of penicillin’s most beneficial aspects include its avoidance of a toxic condition. Most of the drug was used for the armed forces although

it was possible for a physician, upon application through proper channels, to obtain it for a few small illnesses. Sick soldiers in the United States Army were treated and this gave Peoria a certain renown. The National Center for Agricultural Utilization Research's miracle drug has saved numerous lives and has since discovered other pharmaceutical uses for agricultural products.

One of the most well known scientific discoveries, penicillin impacted Peoria in a lab named the National Center for Agricultural Utilization Research (NCAUR). Since 1940, the NCAUR in Peoria has become the largest of four regional laboratories. Also, NCAUR has accomplished more than its original mission of offering assistance to American farmers. Penicillin is probably the most beneficial drug Illinois has ever experienced. Without the production of penicillin, Illinois might not have been able to achieve the goals and successes that occurred. Today, the laboratory is located at 1815 North University Street with tourists wanting to know about the epic event everyday.

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